Expanding Rural Access to Advanced Colorectal Surgery with the Robotic NICE Procedure

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INTRODUCTION

Diverticular disease affects over half of adults by age 60, with up to 5% developing diverticulitis. Complicated cases often require surgical resection, traditionally performed via laparoscopic or robot-assisted extracorporeal techniques, which may increase pain, infection risk, and recovery time. The robotic NICE (Natural Orifice Intracorporeal Anastomosis with transrectal extraction) procedure is a minimally invasive alternative that avoids abdominal incision and has shown improved outcomes, though evidence from non-academic settings remains scarce.

METHODS

Sixteen consecutive patients undergoing the robotic NICE procedure between April 2024 and May 2025 at a single rural community hospital were evaluated. Perioperative data collected included operative time, time to return of flatus, bowel movement, pain scores, length of stay, and postoperative complications. Outcomes were compared to published benchmarks from Haas et al.

RESULTS

Sixteen patients were analyzed. Mean operative time was 255.8 minutes with progressive reduction as workflow improved. Median length of stay was 4.0 days, with median return of bowel function at 2.0 days (flatus) and 3.0 days (bowel movement). Pain scores declined steadily, reaching a mean of 3.6 by POD 3. There were no anastomotic leaks and all specimens were successfully extracted transrectally. Compared with Haas et al., median operative times (236 vs 220 minutes) and complication rates (18.8% vs 12.4%) were similar, but longer return of bowel function (2.3 days vs 18.5 h) and significantly higher POD 2 pain scores (4.44 ± 1.71 vs 2.60 ± 2.50, p = 0.001).

Outcomes	MVHS (n=16)	Haas et al. (n=89)
Median Operative time: Minutes (IQR)	236 (180-452)	220 (150-290)
Return of Bowel Function: Median	**In days:** Flatus: 2.3 BM: 3.4	**In hours:** 18.5
Pain scores (Scale 1-10): Mean (SD)		
POD 0	3.2 (2.2)	4.6 (2.6)
POD 1	4.6 (2.0)	2.8 (2.1)
POD 2	4.2 (1.7)	2.6 (2.5)
Length of stay (days): Median (IQR)	4.0 (3-8)	2 (1-3)

CONCLUSION

The robotic NICE procedure can be safely and effectively implemented in rural hospitals by trained colorectal or minimally invasive surgeons, achieving outcomes comparable to those at high-volume tertiary centers. These findings support the reproducibility of this technique beyond academic settings and highlight its potential to reduce disparities by expanding access to advanced colorectal surgery. Although limited by sample size, ongoing data collection will clarify its long-term impact and scalability.